

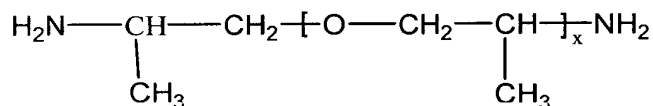
What is Claimed:

1. A polyol prepolymer chain extender for a silicone modified polyurea comprising:
 - at least one amine; and
 - 5 at least one epoxy functional silicone.
2. The polyol prepolymer chain extender of claim 1 wherein said at least one amine is selected from the group consisting of primary aliphatic amines, primary cyclo-aliphatic, secondary aliphatic amines, primary aromatic amines, and
10 secondary aromatic amines, and mixtures thereof.
3. The polyol prepolymer chain extender of claim 1 wherein said epoxy functional silicone is a silicone modified epoxy resin that has the general formula:

4. The polyol prepolymer chain extender of claim 1 wherein said at least one amine is present in the range of from about 50 to about 900 parts by weight, based on the total polyol prepolymer chain extender.

5. The polyol prepolymer chain extender of claim 1 wherein said at least one epoxy functional silicone is present in the range of from about 50 to about 200 parts by weight, based on the total polyol prepolymer chain extender.

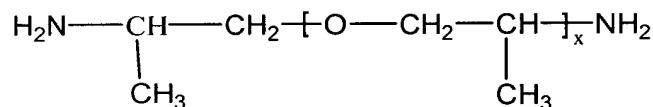
6. The polyol prepolymer chain extender of claim 1 wherein said at least one amine is a combination of from about 150 to about 450 parts by weight of a polyoxypropylenediamine that has a formula:



$$x = 5.6$$

- and from about 250 to about 750 parts by weight of a diethyltoluenediamine (DETDA), wherein x equals 5.6.

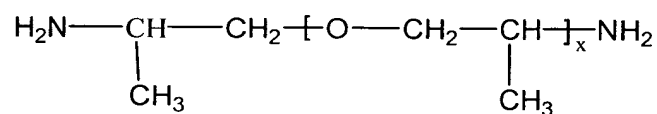
7. The polyol prepolymer chain extender of claim 1 wherein said at least one amine is a combination of from about 150 to about 450 parts by weight of a polyoxypropylenediamine that has a formula:



$$x = 5.6$$

- and from about 250 to about 750 parts by weight of a dimethylthiotoluene diamine (DMTDA), wherein x equals 5.6.

8. The polyol prepolymer chain extender of claim 1 wherein said at least one amine is a combination of from about 150 to about 450 parts by weight of a polyoxypropylenediamine that has a formula:



$$x = 5.6$$

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and from about 200 to about 600 parts by weight of a polyaspartic ester, wherein x equals 5.6.

9. The polyol prepolymer chain extender as in one of claims 6 – 8, in which said epoxy functional silicone is from about 50 to about 150 parts by weight of silicone modified epoxy resin.

10. A silicone modified polyurea comprising:
 a B-component which includes at least one polyol prepolymer chain extender which comprises:
 at least one amine;
 at least one epoxy functional silicone; and
 an A-component which comprises at least one polyisocyanate.

11. The silicone modified polyurea of claim 10 wherein said at least one amine is selected from the group consisting of primary aliphatic amines, primary cyclo-aliphatic, secondary aliphatic amines, primary aromatic amines, and secondary aromatic amines, or a combination of said amines.

12. The polyol prepolymer chain extender of claim 1 wherein said epoxy functional silicone is a silicone modified epoxy resin that has the general formula:

13. The silicone modified polyurea of claim 10 wherein said polyisocyanate is selected from the group consisting of

aliphatic isocyanates selected from the group consisting of hexamethylene diisocyanate (HMDI); a bifunctional monomer of tetraalkyl xylene diisocyanate; 5 cyclohexane diisocyanate; 1,12-dodecane diisocyanate; 1,4-tetramethylene diisocyanate; isophorone diisocyanate (IPDI); and dicyclohexylmethane diisocyanate;

aromatic isocyanates selected from the group consisting of m-phenylene diisocyanate; p-phenylene diisocyanate; polymethylene polyphenylene 10 diisocyanate; 2,4-toluene diisocyanate; 2,6-toluene diisocyanate; dianisidine diisocyanate; bitolylene diisocyanate; naphthalene-1,4-diisocyanate; and diphenylene 4,4'-diisocyanate; and

aliphatic/aromatic diisocyanates, selected from the group consisting of xylylene-1,3-diisocyanate; bis(4-isocyanatophenyl)methane; bis(3-methyl-4- 15 isocyanatophenyl)methane; and 4,4'-diphenylpropane diisocyanate; tetramethyl xylene diisocyanate (TMXDI); and mixtures thereof.

14. The silicone modified polyurea of claim 10 wherein said B- component further comprises UV stabilizers.

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15. The silicone modified polyurea of claim 10 wherein said B- component further comprises color pigments.

16. The silicone modified polyurea of claim 10 wherein said B- 25 component further comprises silane coupling agents.

17. The silicone modified polyurea of claim 10 wherein said B- component further comprises fire retardants.

18. A method of making a polyol prepolymer chain extender for a silicone 30 modified polyurea comprising:

combining an adduct of at least one amine selected from the group consisting of primary aliphatic amines, primary cyclo-aliphatic, secondary aliphatic amines, primary aromatic amines, and secondary aromatic amines, and mixtures

thereof, with at least one epoxy functional silicone to form a solution; and

reacting said solution to form a polyol prepolymer chain extender, wherein said reacting comprises heating said solution at a temperature in the range of from 130° F. to 210° F. for a time period of from 1 hour to 24 hours.

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19. The method of claim 18 wherein said epoxy functional silicone is a silicone modified epoxy resin.

20. A method of making a silicone modified polyurea comprising:

10 combining an adduct of at least one amine selected from the group consisting of primary aliphatic amines, primary cyclo-aliphatic, secondary aliphatic amines, primary aromatic amines, and secondary aromatic amines, and mixtures thereof, with at least one epoxy functional silicone to form a solution;

15 reacting said solution to form a polyol prepolymer chain extender, wherein said reacting comprises heating said solution at a temperature in the range of from 130° F. to 210° F. for a time period of from 1 hour to 24 hours; and

mixing said polyol prepolymer chain extender with at least one polyisocyanate to form a silicone modified polyurea.

20 21. The method of claim 20 wherein said mixing is performed by a pressurizable spray apparatus.

22. A method of applying a silicone modified polyurea to a substrate, comprising:

25 combining an adduct of at least one amine selected from the group consisting of primary aliphatic amines, primary cyclo-aliphatic, secondary aliphatic amines, primary aromatic amines, and secondary aromatic amines, and mixtures thereof, with at least one epoxy functional silicone to form a solution;

30 reacting said solution to form a polyol prepolymer chain extender, wherein said reacting comprises heating said solution at a temperature in the range of from 130° F. to 210° F. for a time period sufficient to substantially react all of said polyol prepolymer chain extender;

cooling said polyol prepolymer chain extender; and

applying said polyol prepolymer chain extender and said at least one

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polyisocyanate simultaneous to said substrate to form a silicone modified polyurea on said substrate.

23. The method of claim 22 wherein said heating is in a temperature
5 range of from 130° F. to 210° F.

24. The method of claim 22 wherein said substrate is prepared prior to application of said silicone modified polyurea.